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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,558	04/23/2001	Robert L. Gerlach	F070	4812

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EXAMINER	
GURZO, PAUL M	

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 08/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/840,558	GERLACH ET AL.	
	Examiner	Art Unit	
	Paul Gurzo	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-7,10-13,22 and 27* is/are allowed.

6)☒ Claim(s) *8,9,20,21,23,24,26,28,29 and 32-35* is/are rejected.

7)☒ Claim(s) *14-19,25,30 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8, 9, 20, 21, 23, 24, 26, 28, 29, and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Todokoro et al. (6,114,695).

Regarding claim 8, 695 teaches a scanning electron microscope comprising a primary electron beam column for forming a primary electron beam and scanning the beam across a specimen surface to cause the emission from the specimen (102) of secondary electrons including Auger electrons, the primary electron beam column including a high resolution objective lens (118) a secondary electron optical system for colleting the Auger electrons through the objective lens (118), and a detector/analyzer (124) for analyzing the Auger electrons (col. 15, lines 20-60, col. 18, lines 44-48, and Fig. 21). They do not explicitly teach a deflector for deflecting the secondary electrons from the path of the primary beam without significantly degrading the resolution of the primary beam, but Fig. 21 clearly depicts the secondary electrons (105b) traveling in a path back up through the objective lens (118) and away from the primary beam. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to deflect the secondary electrons to the desired means to ensure that the primary electron beam is unaffected and the secondary beams are indicative of the specimen surface.

Regarding claims 9 and 28, 695 teaches the use of a shield (35) (col. 14, lines 14-22 and Fig. 18).

Regarding claims 20 and 21, 695 teaches a scanning electron microscope comprising a primary electron beam column for forming a primary electron beam and scanning the beam across a specimen surface to cause the emission from the specimen (102) of secondary electrons, the primary electron beam column including a high resolution objective lens (118) a secondary electron optical system for colleting the electrons through the objective lens (118), and a detector/analyzer (124) for analyzing the electrons (col. 15, lines 20-60, col. 18, lines 44-48, and Fig. 21). They do not explicitly teach a deflector for deflecting the secondary electrons from the path of the primary beam without significantly degrading the resolution of the primary beam, but Fig. 21 clearly depicts the secondary electrons (105b) traveling in a path back up through the objective lens (118) and away from the primary beam. They also teach that the resolution value of 3 nm (col. 14, lines 18-22), and it is obvious that by manipulating the focal distance objective lens the resolution can be made smaller.

Regarding claims 23 and 24, 695 teaches a scanning electron microscope comprising a primary electron beam column for forming a primary electron beam and scanning the beam across a specimen surface to cause the emission from the specimen (102) of secondary electrons, the primary electron beam column including a high resolution objective lens (118) a secondary electron optical system for colleting the electrons through the objective lens (118), and a detector/analyzer (124) for analyzing the electrons (col. 15, lines 20-60, col. 18, lines 44-48, and Fig. 21). They do not explicitly teach a deflector for deflecting the secondary electrons from the path of the primary beam without significantly degrading the resolution of the primary beam, but

Fig. 21 clearly depicts the secondary electrons (105b) traveling in a path back up through the objective lens (118) and away from the primary beam. They also teach that the objective lens immerses the specimen in a magnetic field and voltage application (col. 15, lines 49-52).

Regarding claims 26 and 33, 695 teaches a scanning electron microscope comprising a primary electron beam column for forming a primary electron beam and scanning the beam across a specimen surface to cause the emission from the specimen (102) of secondary electrons including Auger electrons, the primary electron beam column including a high resolution objective lens (118) a secondary electron optical system for colleting the Auger electrons through the objective lens (118), and a detector/analyzer (124) for analyzing the Auger electrons (col. 15, lines 20-60, col. 18, lines 44-48, and Fig. 21). They do not explicitly teach a deflector for deflecting the secondary electrons from the path of the primary beam without significantly degrading the resolution of the primary beam, but Fig. 21 clearly depicts the secondary electrons (105b) traveling in a path back up through the objective lens (118) and away from the primary beam. The Examiner reads a virtual image to be an electron image formed by converging the electrons (see arguments dated 2/8/04, page 12, paragraph 4). 695 teaches acquiring an image of the sample (102) by means of Auger electrons extracted from the sample and traveling in the direction opposing the direction of the primary beam (Fig 21). Therefore, this will form an image of the virtual Auger source off the path of the primary beam. Further, it is obvious that will be converged near the entrance of the secondary electron analyzer so that the image of the Auger electrons is achieved because Fig. 21 clearly shows the secondary electrons (105b) focused at the entrance of the detector/analyzer (124).

Regarding claim 29, 695 teaches a scanning electron microscope comprising a primary electron beam column for forming a primary electron beam and scanning the beam across a specimen surface to cause the emission from the specimen (102) of secondary electrons, the primary electron beam column including a high resolution objective lens (118) a secondary electron optical system for colleting the electrons through the objective lens (118), and a detector/analyzer (124) for analyzing the electrons (col. 15, lines 20-60, col. 18, lines 44-48, and Fig. 21). They do not explicitly teach a deflector for deflecting the secondary electrons from the path of the primary beam without significantly degrading the resolution of the primary beam, but Fig. 21 clearly depicts the secondary electrons (105b) traveling in a path back up through the objective lens (118) and away from the primary beam. Further, they teach the fine resolution as stated above and state that the image displaying technique is achieved through high resolution observations (col. 3, lines 14-18 and col. 6, lines 9-11). Therefore, the resolution of the primary beam will not be degraded.

Regarding claim 32 and 34, 695 teaches a beam energy of 30 keV (col. 6, line 31-35) and an objective lens (118) which is an optical element that helps to focus the secondary electrons.

Regarding claim 35, 695 teaches a scanning electron microscope comprising a primary electron beam column for forming a primary electron beam and scanning the beam across a specimen surface to cause the emission from the specimen (102) of secondary electrons, the primary electron beam column including a high resolution objective lens (118) a secondary electron optical system for colleting the electrons through the objective lens (118), and a detector/analyzer (124) for analyzing the electrons (col. 15, lines 20-60, col. 18, lines 44-48, and Fig. 21). They do not explicitly teach a deflector for deflecting the secondary electrons from the

path of the primary beam without significantly degrading the resolution of the primary beam, but Fig. 21 clearly depicts the secondary electrons (105b) traveling in a path back up through the objective lens (118) and away from the primary beam. In addition, the analyzer (124) must have an entrance for the secondary electrons. Further, it is obvious that will be converged near the entrance of the secondary electron analyzer so that the image of the Auger electrons is achieved because Fig. 21 clearly shows the secondary electrons (105b) focused at the entrance of the detector/analyzer (124).

Allowable Subject Matter

Claims 1-7, 10-13, 22, and 27 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to the independent claim 1, as claimed invention was read in light of the specification, the prior art of record fails to teach the claimed use of an electrostatic capacitor as well as a shield that is conductive on the inside to shield the primary beam and having a potential gradient on the outside to create an external field related to the electric field of the electrostatic capacitor to reduce distortion of the field of the capacitor caused by the shield. With respect to independent claims 10 and 11, as claimed invention was read in light of the specification, the prior art of record fails to teach a shield that shields the primary beam from the field and that is conductive on the inside and resistive on the outside to maintain a potential gradient on the outside corresponding to the field of the deflector. With respect to the independent claim 22, as claimed invention was read in light of the specification, the prior art of record fails to teach the collection efficiency being greater than twenty percent for Auger electrons having an energy of 100 eV. With respect to the independent claim 27, as claimed invention was read in light of the

specification, the prior art of record fails to teach forming an image of the virtual Auger source off the path of the primary beam using an electrostatic capacitor.

Claims 14-19, 25, 30, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach the use of a magnetic field generating coil, electrostatic deflection plates, movable pole pieces, spherical capacitor, snorkel or magnetic lens, or sample movement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Gurzo whose telephone number is (571) 272-2472. The examiner can normally be reached on M-Fri. 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached at (571) 272-2477. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMG

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